REMARKS

Claims 1-5 and 7-20 are pending in the present Application. Claim 7 has been amended, leaving Claims 1-5 and 7-20 for further consideration upon entry of the present Amendment.

No new matter has been introduced by these amendments. Reconsideration and allowance of the claims are respectfully requested in view of the above amendments and the following remarks.

Claim Objections

Claims 7-17 are objected to because of the following informalities: Claim 7 depends from cancelled Claim 6 and Claims 8-17 are directly or indirectly dependent on Claim 7.

Claim 7 has been amended to depend from independent Claim 1. Accordingly, Applicants respectfully request that this objection be withdrawn.

Claim Rejection Under 35 U.S.C. § 103(a)

Claims 1-5, 7-15, 18 and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Randall (US 2002/0455282) in view of Ali (US 4,647,486).

In the Office Action dated May 2, 2006, the Office Action correctly noted that Randall et al. "do not disclose the percent thickness of the mat into which the coating extends." (Office Action dated May 2, 2006, Page 3). Additionally, the Office Action further noted that "although Randall et al. do not explicitly teach the measurement of microporosity as measured by the modified Gurley method, it is reasonable to presume that said limitations are inherent to the invention". Nevertheless, despite the fact that numerous elements are missing from Randall as indicated above, the Office Action asserts that the claims are unpatentable under theories of inherency or obviousness (see e.g., Office Action Page 4),

The presently claimed invention is based on the determination by the inventors that to maximize the strength of the bond between a pre-coated mat and the gypsum core that several inter-related factors, including the coating's microporosity (as recited in the

claims) must be properly maintained in balance. The prior art neither discloses nor suggests the importance of maintaining such inter-relationships for maximizing bond strength.

First, with regards to inherency, the "fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993)." MPEP 2112 IV.

Further, "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows for the teachings of the applied prior art." Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990); MPEP 2112 IV.

The Office Action has not provided a basis in fact and/or technical reasoning to reasonably support that the allegedly inherent characteristics necessarily flows from the teaching of the applied prior art. To further highlight that these teachings do not necessarily flow, Inventor Randall went on the record stating that the prior art, which includes his earlier patent application, "does not disclose, nor suggest the relative importance and inter-relationship of [the claimed] parameters". (Randall declaration page 3, paragraph 6).

As asserted in Mr. Randall's declaration, even though his earlier published patent application, US Patent Publication No. 2002/0455282, discloses (1) overlapping values for mat thickness (paragraph [0038]), (2) overlapping values for coating weight (paragraph [0051]), (3) coating thicknesses of 4 to 30 mils (paragraph [0052], which can be urged to provide (though there is no disclosure of) overlapping values of coating penetration and (4) a functional need for sufficient porosity in the coating to allow water vapor to pass through the coating during board drying (paragraph [0058]), that publication does NOT recognize the importance of a proper level of microporosity, particularly in relation to the other parameters, for maximizing board integrity by positively influencing the dynamic process of slurry penetration during board manufacture. Nothing in the Randall 2002 publication provides a reasonable expectation

that there exists a combined set of parameters that would be ideal for allowing the slurry to penetrate through the mat to the surface of the coating that is internal to the fiber mat (i.e., to the interface between regions 31 and 32 in Figure 3 of the application) to form a adequate bond.

With regards to obviousness, Applicants respectfully submit that a particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized a routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977); MPEP 2144.05.

Again, as explained in the declaration by Mr. Randall, his earlier work is completely silent to careful balancing the dynamic process by which the gypsum slurry invades the non-coated side of the mat and penetrates into the mat. In presently claimed invention, the ease and completeness of penetration is influenced by the microporosity of the coating on the mat, the thickness of that coating (which is directly proportional to the coating weight) and the proportion of the mat that had been penetrated by the coating.

The Office Action also admits that Randall does not recognize the significance that gypsum core calcination in the vicinity of the coated mat facer has on gypsum board strength. Instead the Office Action relies on Ali, U.S. 4,647,486 (hereinafter Ali), to contend that a skilled worker would have found it obvious to adapt this requirement to Randall in order to improve board fire barrier properties.

However, Ali does not suggest that the exact stoichiometry of hydrated gypsum must be maintained across the entire cross-section of the commercially produced gypsum board either to maintain the desired structural properties of the board or to maintain the effectiveness of the board as a fire barrier. Indeed, to the extent Ali uses calcium sulfate anhydrite II in the board, the absolute dihydrate stoichiometry is disturbed. That notwithstanding, however, maintaining the exact dihydrated relationship across the entire cross-section of any commercially produced gypsum board, particularly in the surface portion of the board, is difficult to do in practice because the final heating of the board in the drying oven, following initial hydration, tends to impact the board surfaces disproportionately to the board's interior. Ali does not suggest any particular limit on

such surface calcination that unavoidably accompanies commercial board drying operations. See the Randall Rule 132 declaration, paragraph 14.

For at least these reasons, one of skill in the art would not have the necessary suggestion to make Applicants' claimed invention with a reasonable expectation of success, since the prior art neither discloses nor suggests the importance of maintaining such inter-relationships between the claimed elements that are necessary for maximizing bond strength. Accordingly, independent Claim 1 is not obvious and is therefore allowable. Moreover, as dependent claims that depend from and further limit Claim 1, Claims 2-5, 7-15, 18 and 19 are, by definition, also allowable.

Claims 16 and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Randall in view of Ali, and further in view of Babcock (US 4,746,365). Claim 17 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Randall in view of Ali and Babcock, and further in view of Miyakoshi (5827788).

These rejections depend on the sufficiency of the earlier rejection based on the combination of Randall and Ali for their sufficiency. As discussed above, the combination of Randall with Ali does not make the invention defined by claim 1 obvious. Since Claims 16, 17 and 20 all depend in one way or another on Claim 1, these claims are patentable for at least the same reasons.

Double Patenting

All claims also stand rejected for obviousness-type double patenting over either (1) Claims 1, 3-16 and 18-23 of copending application No. 10/417,344 (the '344 application) or (2) Claims 1-20 of U.S. 6,808,793 (the '793 patent), both in view of Ali. These rejections are respectfully traversed.

None of the claims in either the '344 application, or in the '793 patent adds anything to what is presented by the statutory obviousness rejection based on the Randall and Ali combination concerning the inter-related factors recited in the claims that must be properly maintained in balance to obtained the strength improvement of the present invention. Indeed, the same can be said about the complete specification of these

disclosures (in an obviousness-type double patenting rejection the obviousness analysis is limited to the subject matter described by the claims). As noted by Mr. Randall in his declaration, US 6,808,793 has an identical specification to the Randall 2002 publication (which publication then matured into and thus is the same as US 6,770,354). Thus, the '793 patent has the same short-comings as described above in connection with the Randall 2002 publication. Similarly, the teachings in co-pending application 10/417,344 have the same short-comings as described above in connection with the Randall 2002 publication. None of these disclosures describes or suggests the critical inter-relationship of the recited parameters on the structural integrity of coated fiber mat-faced gypsum boards, as reflected in the pending claims.

Conclusion

In view of the foregoing, it is respectfully submitted that the instant application is in condition for allowance. Accordingly, it is respectfully requested that this application be allowed and a Notice of Allowance issued. If the Examiner believes that a telephone conference with Applicants' attorneys would be advantageous to the disposition of this case, the Examiner is cordially requested to telephone the undersigned.

In the event the Commissioner of Patents and Trademarks deems additional fees to be due in connection with this application, Applicants' attorney hereby authorizes that such fees be charged to Deposit Account No. 50-3313.

Respectfully submitted,

Date: March 12, 2007

By:/Joel T. Charlton/

Joel T. Charlton
Registration No. 52,721
Georgia-Pacific LLC
Patent Group GA030-43
133 Peachtree Street, N.E.
Atlanta, GA 30303-1847
Tel: (404) 652-4864